

**What is claimed is:**

1. A catheter for insertion into a biological conduit comprising:
  - an elongate catheter shaft having a proximal end and a distal end,
  - a material collection chamber located within the catheter body,
  - a controllably arcuate segment including at least one opening that creates a fluid path between the material collection chamber and an exterior portion of the catheter shaft,
  - and;
  - a sliding member that moves material received through the arcuate segment opening into the material collection chamber away from said opening.
2. The catheter of Claim 1 further comprising suction means near the proximal end, said suction means in fluid communication with the opening in the controllably arcuate segment.
3. The catheter of Claim 1 further comprising an aspiration chamber near the proximal end, said aspiration chamber in fluid communication with the material collection chamber.
4. The catheter of Claim 3 further comprising a one-way valve located between the aspiration chamber and the material collection chamber, said valve oriented to allow material to flow from the material collection chamber to the aspiration port.
5. The catheter of Claim 3 wherein the aspiration chamber includes an integrated plunger assembly.

6. The catheter of Claim 1 wherein the material collection chamber is proximal to the controllably arcuate segment.
7. The catheter of Claim 1 further comprising a material extraction lumen between the distal end of the catheter shaft and an aspiration port located on the proximal portion of the device.
8. The catheter of Claim 1 wherein the controllably arcuate segment has a normally bowed bias.
9. The catheter of Claim 8 wherein positioning of the sliding member within the controllably arcuate segment causes said arcuate segment to be relatively straight.
10. The catheter of Claim 1 further comprising a curving element that is used to control the geometry of the controllably arcuate segment.
11. The catheter of Claim 10 further comprising a power source which when connected to the curving element causes said curving element to change geometry.
12. The catheter of Claim 1 wherein the sliding member has a cutting edge on the end facing the opening in the controllably arcuate segment.
13. The catheter of Claim 1 wherein the sliding member is attached to a flexible shaft, said shaft traversing the length of the catheter and said sliding member advanced and retracted by advancing and retracting said shaft from controls located on the proximal end of said catheter.
14. The catheter of Claim 1 further comprising a rotational orientation element.

15. A catheter for insertion into a biological conduit comprising:
- an elongate catheter body having a proximal end and a distal end,
  - an aspiration chamber located near the proximal end,
  - a controllably arcuate segment including at least one opening,
  - and;
  - an aspiration lumen in fluid communication with the aspiration chamber and one or more of the openings in the controllably arcuate segment.
16. The catheter of Claim 15 further comprising a sliding member that moves material received through the arcuate segment one or more openings away from said one or more openings.
17. A transluminal method for removing material from a biological conduit, said method comprising the steps of:
- A. providing a catheter device that comprises:
    - an elongate catheter shaft having a proximal end and a distal end,
    - a controllably arcuate segment including at least one opening in fluid communication with the proximal end,
    - and;
    - a sliding member that moves material received through the arcuate segment opening away from said opening
  - B. percutaneously or surgically inserting and transluminally

advancing the catheter into the biological conduit

- C. applying suction to the at least one opening in the controllably arcuate segment
- D. retracting sliding member moving material away from the at least one opening.

18. The method of Claim 17 further comprising the step of:

- E. transforming controllably arcuate segment to a relatively straight geometry.

19. The method of Claim 18 further comprising the steps of:

- F. rotating the catheter device
- G. repeating steps C thru E at least one time.

20. A transluminal method for removing material from a biological conduit, said method comprising the steps of:

- A. providing a catheter device that comprises:
  - an elongate catheter shaft having a proximal end and a distal end
  - a controllably arcuate segment including at least one opening in fluid communication with the proximal end
- B. percutaneously or surgically inserting and transluminally advancing the catheter into the biological conduit
- C. applying suction to the at least one opening in the controllably

arcuate segment

- D. changing the shape of the controllably arcuate segment from a relatively bowed geometry to a relatively straight geometry.